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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,427	06/19/2001	Zhixing Wang	3346	2915

7590

03/03/2005

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EXAMINER

REVAK, CHRISTOPHER A

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

09/884,427

### Applicant(s)

WANG, ZHIXING

### Examiner

Christopher A. Revak

### Art Unit

2131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 3-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date Jan. 3, 2002.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on January 3, 2002 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

### ***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 3-6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. It is claimed of a cryptographic system comprising software which is just software alone and of itself. The applicant claims hardware "or" software and the examiner suggests amending the claims to incorporate both that of software embodied on hardware or to have the software embodied on a computer readable medium.

### ***Claim Objections***

4. Claims 3-6 are objected to because of the following informalities: On line 12 of claim 3, it ends with the limitation "digital light interference signal generator;" and it is

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unclear if that is the end of the claim since a “;” is present or if there is an additional limitation. Regardless, there is an “and” missing prior to the last limitation. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Tiemann et al, U.S. Patent 5,568,301.

As per claim 1, it is disclosed by Tiemann et al of a method for generating a key for secure communications (encryption or decryption) of data (col. 1, lines 5-10 and col. 2, lines 8-9). Parameters are generated for a digital light interference (optical) signal generator and the digital light interference (optical) signal generator generates a series of luminance measurements at an interference fringe (col. 1, line 65 through col. 2, line 3 and col. 3, lines 43-46). The measurements are converted into a series of numbers and a key is generated for secure communications (encryption or decryption) of data based on the series of numbers (col. 2, lines 5-8,34-38 and col. 3, lines 8-11).

As per claim 2, Tiemann et al teaches of a method for generating a key for secure communications (encryption or decryption) of data (col. 1, lines 5-10 and col. 2, lines 8-9). Parameters are generated for two optical signals and a light interference measure device generates a series of luminance measurements at an interference fringe of the two optical signals (col. 1, lines 42-51; col. 1, line 65 through col. 2, line 3; and col. 3, lines 43-46). The measurements are converted into a series of numbers and

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a key is generated for secure communications (encryption or decryption) of data based on the series of numbers (col. 2, lines 5-8,34-38 and col. 3, lines 8-11).

As per claim 3, Tiemann et al discloses of a secure communication (cryptographic) system wherein hardware for segmenting and converting a cryptograph key into two digital optical signals (col. 1, lines 5-10 and col. 1, lines 42-51). The optical signals have amplitudes, wavelengths, initial phases, and optical path differences (aberrations) at a point where the two digital optical signals meet (col. 1, lines 31-54 and col. 3, lines 43-56). A digital light interference signal generator is hardware for secure communications (encrypting and decrypting) wherein as the optical path lengths (aberration) values dynamically change with the luminance of a light interference fringe at points changing as a series of random numbers (col. 1, lines 42-51; col. 1, line 65 through col. 2, line 7; and col. 3, lines 43-46). The hardware uses the series of generating secure communication (ciphertext obtained by XORing operations) between plaintext and the random numbers generated by the digital light interference (optical) signal generator (col. 1, line 65 through col. 2, line 7 and col. 3, lines 8-11,43-46).

As per claim 4, Tiemann et al teaches of secure communications (ciphertext that is encrypted and decrypted to produce plaintext by XORing operations) that includes use of the random numbers (col. 2, lines 5-7).

As per claim 5, it is taught by Tiemann et al of optical signals having amplitudes, wavelengths, initial phases, and optical path differences (aberrations) at a point where the two digital optical signals meet (col. 1, lines 31-54 and col. 3, lines 43-56). They are adjusted to get the sequence of random numbers from the digital light interference

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(optical) signal generator (col. 1, lines 42-51; col. 1, line 65 through col. 2, line 7; and col. 3, lines 43-46).

### ***Allowable Subject Matter***

6. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hughes et al, U.S. Patent 6,748,083 discloses of generation of a key for use in quantum cryptography by using optical signals.

Hassan et al, U.S. Patent 5,995,533 discloses of using characteristics of radio channels for establishing pseudorandom sequences for use in communication.

Hughes et al, U.S. Patent 5,966,224 discloses of generation of a key from a laser that outputs pulses of light.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Revak whose telephone number is 571-272-3794. The examiner can normally be reached on Monday-Friday, 6:30am-4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR

  
March 1, 2005

Christopher Revak  
AU 2131

  
3/1/05